CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: July 17, 2020

TO: Jennifer Jerich – SCR/Horicon

FROM: Sarah Luck – SCR/Fitchburg

SUBJECT: Water Quality-Based Effluent Limitations for the Lime Ridge Wastewater Treatment Facility
WPDES Permit No. WI-0036447-07

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using Chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from the Lime Ridge Wastewater Treatment Facility in Sauk County. This municipal wastewater treatment facility (WWTF) discharges to Narrows Creek, located in the Narrows Creek/Baraboo River Watershed (LW22) in the Lower Wisconsin River Basin. This discharge is included in the Wisconsin River TMDL as approved by EPA. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis at Outfall 001:

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
BOD_5						1
May – October			42 mg/L 5.4 lbs/day	30 mg/L		
November – April			45 mg/L	30 mg/L		
TSS						1
May – October			42 mg/L 5.4 lbs/day	30 mg/L		
November – April			45 mg/L	30 mg/L		
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		6.0 mg/L				1,9
Ammonia Nitrogen						2
April	20 mg/L		19 mg/L	8.0 mg/L		
May – September	20 mg/L		5.0 mg/L	8.0 mg/L		
October	20 mg/L		5.0 mg/L	13 mg/L		
November – March	20 mg/L		**20 mg/L**	13 mg/L		
Bacteria						3
Interim Limit Fecal Coliform				400 #/100 mL geometric mean		
Final Limit *E. coli*				126 #/100 mL geometric mean		
Residual Chlorine	38 µg/L		22 µg/L	**22 µg/L**		2
Phosphorus						4,5
Interim				5.5 mg/L		
Final				0.085 lb/day	0.028 lb/day	
Nitrite + Nitrate						6
Nitrogen, Total Kjeldahl						6

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Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Total Nitrogen						6
Copper						7
Acute WET						8

Footnotes:

1. No changes from the current permit.
2. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7) are included in bold.
3. Bacteria limits apply during the disinfection season of May through September. The fecal coliform interim limit will apply until the end of the compliance schedule when *E. coli* limits take effect. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
4. An interim limit is needed when a compliance schedule is included in the permit to meet the TMDL limit. The interim limit should reflect a value which the facility is able to currently meet; however, it should also consider the receiving water quality, keeping the water from further impairment. It is recommended that the interim limit be set equal to the current interim limit of 5.5 mg/L, expressed as a monthly average.
5. A Total Maximum Daily Load (TMDL) has been approved by U.S. EPA for the Wisconsin River Basin to address phosphorus water quality impairments within the TMDL area. This TMDL resulted in limitations for phosphorus that must be included in WPDES permits. The current criteria and the proposed site specific criteria allocations are equivalent.
6. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen (total kjeldahl nitrogen and nitrate/nitrite) monitoring is recommended for all minor municipal permittees. Total Nitrogen is the sum of nitrate (NO_3), nitrite (NO_2), and total kjeldahl nitrogen (all expressed as N).
7. Quarterly monitoring throughout the permit term is recommended for copper.
8. Two acute WET tests are recommended during the permit term. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge and should continue after the permit expiration date (until the permit is reissued).
9. The dissolved oxygen limit of 6.0 mg/L is due to the dissolved oxygen value of 6.0 mg/L being used in the 26-lb method for calculating BOD_5.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Sarah Luck (Sarah.Luck@wisconsin.gov) or Diane Figiel (Diane.Figiel@wisconsin.gov).

Attachments (4) – Narrative, Site Map, Ammonia Nitrogen Calculations, and Thermal Table

PREPARED BY: Sarah Luck _____ Date: July 17, 2020

Sarah Luck
Water Resources Engineer

E-cc: Tanner Connors, Wastewater Engineer – SCR/Fitchburg
Tom Bauman, Regional Wastewater Supervisor – SCR/Fitchburg
Diane Figiel, Water Resources Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for
Lime Ridge Wastewater Treatment Facility

WPDES Permit No. WI-0036447-07

Prepared by: Sarah Luck

PART 1 – BACKGROUND INFORMATION

Facility Description:
Lime Ridge Wastewater Treatment Facility is a recirculating sand filter wastewater treatment plant providing treatment to a combination of domestic and some commercial wastewater. Each residence has a septic tank that discharges to the sanitary sewer leading to the wastewater treatment facility. The facility includes a settling tank with wastewater pumped to a three-cell recirculating sand filter. Underdrains collect treated effluent which may be pumped back up to the sand filter with influent wastewater or. The effluent is disinfected with chlorine and then dechlorinated before being discharged to the stream via a cascade step aerator. The facility is designed to treat an average daily flow of 0.0154 MGD.

Attachment #2 is a map of the area showing the approximate location of Outfall 001.

Existing Permit Limitations: The current permit, expiring on September 30, 2020, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						2
BOD_5						1
May – October			42 mg/L 5.4 lbs/day	30 mg/L		
November – April			45 mg/L	30 mg/L		
TSS						1
May – October			42 mg/L 5.4 lbs/day	30 mg/L		
November – April			45 mg/L	30 mg/L		
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		6.0 mg/L				1,3
Ammonia Nitrogen						
April	20 mg/L		19 mg/L	8.0 mg/L		
May – September	20 mg/L		5.0 mg/L	8.0 mg/L		
October	20 mg/L		5.0 mg/L	13 mg/L		
November – March	20 mg/L		-	13 mg/L		
Fecal Coliform				400#/100 mL		1
May – September				geometric mean		
Residual Chlorine	38 µg/L		22 µg/L			1
Phosphorus						4
Interim				5.5 mg/L		
Final				0.225 mg/L	0.075 mg/L	

Footnotes:

1. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
2. Monitoring only.
3. The dissolved oxygen limit of 6.0 mg/L is due to the dissolved oxygen value of 6.0 mg/L being used in the 26-lb method for calculating BOD_5.
4. This is an interim limit.

Receiving Water Information:

- Name: Narrows Creek
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm water sport fish community, non-public water supply.
- It appears the discharge may be to an unnamed tributary (WBIC 5031045) that is approximately 0.1 mi long. The effluent from this discharge should not exceed the water quality criteria of this segment. The modeled natural community is macroinvertebrate but should be verified prior to the next permit reissuance.
- Low Flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q_{10} and 7-Q_2 values are estimated by U.S. Geological Survey (USGS) and Department staff using the relationship between low flow formulas generated by USGS for the Lower Wisconsin basin. The facility may request updated low flows from USGS.

  7-Q_{10} = 0.2 cfs (cubic feet per second)
  7-Q_2 = 0.3 cfs
  Harmonic Mean Flow = 0.72 cfs using a drainage area of 2.6 mi^2 (drainage area estimated using the Watershed Delineation tool L-THIA by Purdue)
  The Harmonic Mean has been estimated based on average flow and the 7-Q10 using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).
- Hardness = 175 mg/L as $CaCO_3$. This value represents the geometric mean of data collected in 1997 from the Baraboo River at STH 23 (Station 573076).
- % of low flow used to calculate limits in accordance with s. NR 106.06 (4) (c) 5., Wis. Adm. Code: 25%
- Source of background concentration data: Metals data from the Baraboo River at STH 23-33 in Reedsburg is used for this evaluation because there is no data available for Narrows Creek. The Baraboo River is within the same ecological landscape so ambient water quality characteristics are expected to be similar. The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for ammonia nitrogen are described later.
- Multiple dischargers: None.
- Impaired water status: Narrows Creek is listed as impaired for total phosphorus (listed 4/1/2014) at the outfall location and is within an EPA-approved TMDL area.

Effluent Information:

- Flow Rate:

  Design annual average = 0.0154 MGD (Million Gallons per Day)
  For reference, the actual average flow from October 2015 through April 2020 was 0.0108 MGD.
- Hardness = 302 mg/L as $CaCO_3$. This value represents the geometric mean of data from May 2020

reported on the permit application.

- Acute dilution factor used in accordance with s. NR 106.06 (3) (c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water Source: Domestic wastewater with water supply from wells.
- Additives: chlorine and sodium bisulfate (dechlorination).
- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus Chloride and Hardness.

Sample Date	Copper µg/L	Sample Date	Copper µg/L	Sample Date	Copper µg/L
04/30/2020	27	05/14/2020	47	05/28/2020	13
05/04/2020	24	05/18/2020	23	06/01/2020	15
05/07/2020	24	05/22/2020	25	06/05/2020	11
05/11/2020	50	05/25/2020	21		
1-day P_{99} = 68 µg/L					
4-day P_{99} = 43 µg/L					

	Chloride mg/L
04/30/2020	180
05/04/2020	200
05/07/2020	190
05/14/2020	220
Mean	198

Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2 below, in the column titled "MEAN EFFL. CONC.".

The following table presents the average concentrations and loadings at Outfall 001 from October 2015 through April 2020 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6):

	Average Measurement	Average Mass Discharged
BOD_5	3.8 mg/L*	0.69 lb/day*
TSS	2.2 mg/L	0.17 lb/day*
pH field	6.98 s.u.	
Dissolved Oxygen	7.85 mg/L	
Phosphorus	4.7 mg/L	
Ammonia Nitrogen	1.3 mg/L*	
Fecal Coliform	137#/100 mL (geomean)	
Residual Chlorine	<100 mg/L	

*Results below the level of detection (LOD) were included as zeroes in calculation of average.

Attachment #1

PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN

Permit limits for toxic substances are required whenever any of the following occur:

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P_{99}) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q_{10}

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. Previously daily maximum limits for toxic substances were calculated as two times the ATC. However, changes to ch. NR 106, Wis. Adm. Code (September 1, 2016) require the Department to calculate acute limitations using the same mass balance equation as used for other limits along with the 1-Q_{10} receiving water low flow to determine if more restrictive effluent limitations are needed to protect the receiving stream from discharges which may cause or contribute to an exceedance of the acute water quality standards.

$$\text{Limitation} = \frac{(WQC)\,(Qs + (1-f)\,Qe) - (Qs - f\,Qe)\,(Cs)}{Qe}$$

Where:

WQC =Acute toxicity criterion or secondary acute value according to ch. NR 105

Qs = average minimum 1-day flow which occurs once in 10 years (1-day Q_{10}) if the 1-day Q_{10} flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q_{10}).

Qe = Effluent flow (in units of volume per unit time) as specified in s. NR 106.06(4)(d), Wis. Adm. Code.

f = Fraction of the effluent flow that is withdrawn from the receiving water, and

Cs = Background concentration of the substance (in units of mass per unit volume) as specified in s. NR 106.06(4)(e), Wis. Adm. Code.

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q_{10} method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is not the case for Lime Ridge Wastewater Treatment Facility, and the limits are set based on two times the acute toxicity criteria.

The following tables list the calculated water quality-based effluent limitations for this discharge along with the results of effluent sampling for all the detected substances. All concentrations are expressed in terms of micrograms per Liter (µg/L), except for hardness and chloride (mg/L).

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 0.16 cfs, (1-Q_{10} (estimated as 80% of 7-Q_{10})), as specified in s. NR 106.06 (3) (bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD.* mg/L	ATC	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P_{99}	1-day MAX. CONC.
Arsenic		340	680	140	5.8		
Copper	302	44	88			68	50
Nickel	268	1100	2200	430	6.7		
Zinc	302	320	630	130	36		
Chloride (mg/L)		757	1510	303	198		

* The indicated hardness may differ from the effluent hardness because the effluent hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the acute criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

* * The 2 × ATC method of limit calculation yields a more restrictive limit than consideration of ambient concentrations and 1-Q_{10} flow rates per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 0.05 cfs (¼ of the 7-Q_{10}), as specified in s. NR 106.06 (4) (c), Wis. Adm. Code

SUBSTANCE	REF. HARD. mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P_{99}
Arsenic		150	2.0	470	93	5.8	
Copper	175	17	3.9	43			43
Nickel	175	84		259	52	6.7	
Zinc	175	196		608	122	36	
Chloride (mg/L)		395	8.0	1200	241	198	

Monthly Average Limits based on Wildlife Criteria (WC)

The effluent characterization did not include any effluent sampling results for substances for which Wildlife Criteria exist.

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 0.18 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06 (4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Nickel	43000		370000	74000	6.7

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 0.18 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06 (4), Wis. Adm. Code.

SUBSTANCE	HCC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	13	2.0	99	20	5.8

In addition to evaluating the need for limits for each individual substance for which HCC exist, s. NR 106.06(8), Wis. Adm. Code, requires the evaluation of the cumulative cancer risk. Because no effluent limits are needed based on HCC, determination of the cumulative cancer risk is not needed per s. NR 106.06(8), Wis. Adm. Code.

Conclusions and Recommendations: Based on a comparison of the effluent data and calculated effluent limitations, no effluent limitations are required.

Total Residual Chlorine – Because chlorine is added as a disinfectant, effluent limitations are recommended to assure proper operation of the de-chlorination system. Section NR 210.06(2)(b), Wis. Adm. Code, states, "When chlorine is used for disinfection, the daily maximum total residual chlorine concentration of the discharge may not exceed 0.10 mg/L." Because the WQBELs are more restrictive, they are recommended instead. Specifically, a **daily maximum limit of 38 µg/L** (38.06, rounded to two significant figures) **and a weekly average of 22 µg/L are required**. Due to revisions to s. NR 106.07(2), Wis. Adm. Code, mass limitations are no longer required. Additional limits are discussed in the expression of limits section of this memo.

Chloride **–** Considering available effluent data from the current permit term (sampled during May 2020 and reported on the permit application), the average chloride concentration is 198 mg/L. The effluent concentrations are below the calculated WQBELs for chloride; therefore, no effluent limits are needed. **No chloride monitoring is needed except for the next permit application.**

Copper **–** Considering available effluent data from the current permit term (sampled from 4/30/20 – 6/5/20), the 4-day P_{99} concentration is 43.48 µg/L which is only very slightly less than the calculated weekly average limit of 43.50 µg/L. Given this, and because of the variability shown within the dataset, **quarterly monitoring is recommended** during the permit term.

Mercury – The permit application did not require monitoring for mercury because Lime Ridge Wastewater Treatment Facility is categorized as a minor facility as defined in s. NR 200.02(8), Wis. Adm. Code. In accordance with s. NR 106.145(3)(a)3., Wis. Adm. Code, a minor municipal discharger shall monitor, and report results of influent and effluent mercury monitoring once every three months if, "there are two or more exceedances in the last five years of the high-quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5)." However, since Lime Ridge Wastewater Treatment Facility is a recirculating sand filter and generates solids which are hauled away as septage, sludge sampling is not available. It is not expected that there are exceedances of the high-quality mercury concentration based on similar municipal treatment plants and the lack of industries. **No monitoring is recommended.**

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. The current permit has daily maximum, weekly average, and monthly average limits. These limits are re-evaluated at this time due to the following changes:

- Subchapter IV of ch. NR 106, Wis. Adm. Code allows limits based on available dilution instead of limits set to twice the acute criteria.
- The maximum expected effluent pH has changed.

Daily Maximum Limits based on Acute Toxicity Criteria (ATC):
Daily maximum limitations are based on acute toxicity criteria in ch. NR 105, Wis. Adm. Code, which are a function of the effluent pH and the receiving water classification. The acute toxicity criterion (ATC) for ammonia is calculated using the following equation.

$$\text{ATC in mg/L} = [A \div (1 + 10^{(7.204 - pH)})] + [B \div (1 + 10^{(pH - 7.204)})]$$

Where:

A = 0.411 and B = 58.4 for a Warm Water Sport fishery, and
pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 262 sample results were reported from October 2015 through April 2020. The maximum reported value was 7.76 s.u. (Standard pH Units). The effluent pH was 7.70 s.u. or less 99% of the time. The 1-day P_{99}, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 7.57 s.u., and the mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 7.54 s.u. Therefore, a value of 7.70 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 7.70 s.u. into the equation above yields an ATC = 14 mg/L.

Potential changes to daily maximum Ammonia Nitrogen effluent limitations:
Subchapter IV of ch. NR 106, Wis. Adm. Code (effective September 1, 2016) specifies methods for the use of the 1-Q_{10} receiving water low flow to calculate daily maximum ammonia nitrogen limits if it is determined that the previous method of acute ammonia limit calculation (2×ATC) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

The calculated daily maximum ammonia nitrogen effluent limits using the mass balance approach with the 1-Q_{10} (estimated as 80 % of 7-Q_{10}) and the 2×ATC approach are shown below.

	Ammonia Nitrogen Limit mg/L
2×ATC	29
1-Q_{10}	110

The 2×ATC method yields the most stringent limits for Lime Ridge Wastewater Treatment Facility.

The calculated limit of 29 mg/L is greater than the current daily maximum limit of 20 mg/L. If Lime Ridge Wastewater Treatment Facility would like to request an increase to the existing permit limits, an assessment of their effluent data consistent with the requirements of ss. NR 207.04(1)(a) and (c), Wis. Adm. Code, must be provided. This evaluation is on a parameter by parameter basis and includes consideration of operations, maintenance, and temporary upsets. Without a demonstration of need for a higher limit in accordance with s. NR 207.04, Wis. Adm. Code, the current limits must be continued in the reissued permit. Since the highest reported effluent concentration was 15 mg/L during the previous permit term, the Department would be unable to increase the limit due to the lack of need as shown via the antidegradation rule (ch. NR 207, Wis. Adm. Code).

Attachment #1

Presented below is a table of daily maximum limitations corresponding to various effluent pH values. Use of this table in lieu of the single limit is not necessarily recommended in the permit, but it is presented herein for informational purposes.

Daily Maximum Ammonia Nitrogen Limits – WWSF, WWFF & LFF

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
$6.0 \leq pH \leq 6.1$	108	$7.0 < pH \leq 7.1$	66	$8.0 < pH \leq 8.1$	14
$6.1 < pH \leq 6.2$	106	$7.1 < pH \leq 7.2$	59	$8.1 < pH \leq 8.2$	11
$6.2 < pH \leq 6.3$	104	$7.2 < pH \leq 7.3$	52	$8.2 < pH \leq 8.3$	9.4
$6.3 < pH \leq 6.4$	101	$7.3 < pH \leq 7.4$	46	$8.3 < pH \leq 8.4$	7.8
$6.4 < pH \leq 6.5$	98	$7.4 < pH \leq 7.5$	40	$8.4 < pH \leq 8.5$	6.4
$6.5 < pH \leq 6.6$	94	$7.5 < pH \leq 7.6$	34	$8.5 < pH \leq 8.6$	5.3
$6.6 < pH \leq 6.7$	89	$7.6 < pH \leq 7.7$	29	$8.6 < pH \leq 8.7$	4.4
$6.7 < pH \leq 6.8$	84	$7.7 < pH \leq 7.8$	24	$8.7 < pH \leq 8.8$	3.7
$6.8 < pH \leq 6.9$	78	$7.8 < pH \leq 7.9$	20	$8.8 < pH \leq 8.9$	3.1
$6.9 < pH \leq 7.0$	72	$7.9 < pH \leq 8.0$	17	$8.9 < pH \leq 9.0$	2.6

Weekly and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)

The weekly and monthly average ammonia nitrogen limits calculation from the previous memo do not change because there have been no changes in the effluent and receiving water flow rates. The calculations from the previous WQBEL memo are shown in Attachment #3.

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from October 2015 through April 2020.

Ammonia Nitrogen mg/L	April	May – September	October	November – March
1-day P_{99}	3.32	11.20	4.66	12.24
4-day P_{99}	1.88	6.20	2.54	6.68
30-day P_{99}	1.07	2.66	1.11	3.16
Mean*	0.72	1.18	0.52	1.73
Std	0.68	3.02	1.23	2.80
Sample size	21	83	22	104
Range	<0.12 – 2.10	<0.12 - 13.88	<0.09 - 3.9	<0.09 – 15.00

*Values lower than the level of detection were substituted with a zero

Effluent data is compared to the calculated limits to determine the need to include ammonia limits by calculating 99th upper percentile (or P_{99}) values for ammonia during each of the month ranges and comparing the daily maximum values to the daily maximum limit. Based on this comparison, only weekly average limits are required during May – September based on reasonable potential. However, where there are existing ammonia nitrogen limits in the permit, the limits must be retained regardless of reasonable potential, consistent with s. NR 106.33(1)(b), Wis. Adm. Code:

(b) If a permittee is subject to an ammonia limitation in an existing permit, the limitation shall be included in any reissued permit. Ammonia limitations shall be included in the permit if the permitted facility will be providing treatment for ammonia discharges.

Conclusions and Recommendations:
In summary, after rounding to two significant figures, the following ammonia nitrogen limitations are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code.

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
April	20	19	8.0
May – September	20	5.0	8.0
October	20	5.0	13
November – March	20	**20**	13

Additional limits to meet the requirements in s. NR 106.07, Wis. Adm Code, denoted in bold text above, are addressed in the expression of limits section of this memo.

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR BACTERIA

On May 1, 2020, revisions to chs. NR 102 and NR 210, Wis. Adm. Code became effective which replace fecal coliform limits with new *Escherichia coli* (*E. coli*) limits for protection of recreational uses. Section NR 210.06(2)(a)1, Wis. Adm. Code, includes two limits which must be included in permits for facilities which are required to disinfect:

1. The geometric mean of *E. coli* bacteria in effluent samples collected in any calendar month may not exceed 126 counts/100 mL.
2. No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 counts/100 mL.

E. coli monitoring is recommended at the same frequency that fecal coliform monitoring is required in the current permit. Because Lime Ridge Wastewater Treatment Facility's permit requires weekly monitoring, the 410 counts/100 mL limit will effectively function as a daily maximum limit unless the facility performs additional monitoring. Any additional monitoring beyond what is required by the permit must also be reported on the DMR as required in the standard requirements section of the permit.

These limits are required during May through September. No changes are recommended to the current recreational period and the required disinfection season.

Interim Limit
At this time, there is no effluent *E. coli* data available to determine if these limits are currently met. The permit will include a compliance schedule to meet these limits. During the compliance schedule, an interim limit applies to prevent back-sliding from the current level of disinfection during the compliance schedule period. Therefore, the current **fecal coliform limit shall be included in the reissued permit as an interim limit of 400 counts/100 mL as a monthly geometric mean**.

PART 5 – PHOSPHORUS

Technology Based Phosphorus Limit
Subchapter II of Chapter NR 217, Wis. Adm. Code, requires municipal wastewater treatment facilities that discharge greater than 150 pounds of Total Phosphorus per month to comply with a monthly average limit of 1.0 mg/L, or an approved alternative concentration limit.

Because Lime Ridge Wastewater Treatment Facility does not currently have an existing technology-based limit, the need for this limit in the reissued permit is evaluated. The data demonstrates that the annual monthly average phosphorus loading is less than 150 lbs/month, which is the threshold for municipalities in accordance to s. NR 217.04 (1) (a) 1, Wis. Adm. Code, and therefore, no technology-based limit is required.

Month	Average Phosphorus Concentration (mg/L)	Total Effluent Flow (Million Gallons)	Calculated Mass (lbs/month)
Jan 2019	5.4	0.416	19
Feb 2019	4.7	0.192	7.5
Mar 2019	5.5	0.554	25
April 2019	5.2	0.351	15
May 2019	5.9	0.324	16
June 2019	5.9	0.244	12
July 2019	4.5	0.571	22
Aug 2019	2.8	0.329	7.6
Sept 2019	1.6	0.329	4.5
Oct 2019	0.8	0.256	1.8
Nov 2019	1.1	0.260	2.4
Dec 2019	2.7	0.280	6.3
Average			**12**

Total P (lbs/month) = Monthly average (mg/L) × total flow (MG/month) × 8.34 (lbs/gallon)
Where total flow is the sum of the actual (not design) flow (in MGD) for that month

In addition, the need for a WQBEL for phosphorus must be considered.

Water Quality-Based Effluent Limits (WQBEL)
TMDL Limits – Phosphorus
The Wisconsin River Basin Total Maximum Daily Load (WRB TMDL) was developed by the Department and was approved by the U.S. Environmental Protection Agency on April 26, 2019. This document can be found at: https://dnr.wi.gov/topic/TMDLs/WisconsinRiver/. The WRB TMDL addresses the impairment of aquatic recreational and aquatic life uses and covers portions of 22 counties in Wisconsin. The WRB TMDL establishes phosphorus wasteload allocations (WLA) to reduce the loading in the entire watershed including WLAs to meet water quality standards for tributaries to the Wisconsin River. The WLAs found in Appendices J and K of the *Total Maximum Daily Loads for Total Phosphorus in the WRB TMDL* report for Lime Ridge are 8 lbs/year, a maximum annual load, and 0.0219 lb/day, a maximum daily load.

The daily WLAs in the WRB TMDL equal the annual WLA divided by the number of days in the year. Therefore, the daily WLA is an annual average. Since the derivation of daily WLAs from annual WLAs

does not take effluent variability or monitoring frequency into consideration, maximum daily WLAs from the WRB TMDL should not be used directly as permit effluent limits.

Therefore, limits given to continuously discharging facilities covered by the WRB TMDL are given monthly average mass limits. If the equivalent effluent concentration is less than or equal to 0.3 mg/L, six-month average mass limits are also included. The following equation shows the calculation of equivalent effluent concentration:

TP Equivalent Effluent Concentration = Daily WLA ÷ (Flow Rate * Conversion Factor)
= 0.0219 lbs/day ÷ (0.0154 MGD * 8.34)
= 0.171 mg/L

Since the equivalent effluent concentration is less than 0.3 mg/L, both a six-month average mass limit and a monthly average mass limit are applicable for total phosphorus. The monthly average limit is set equal to three times the six-month average limit.

TP Six-Month Average Permit Limit = Daily WLA * 6-monthly average multiplier
= 0.0219 lbs/day * 1.30
= 0.028 lbs/day

TP Monthly Average Permit Limit = TP Six-Month Average Permit Limit * 3
= 0.028 lbs/day * 3
= 0.085 lbs/day

The multiplier used in the six-month average calculation was determined according to TMDL implementation guidance. A coefficient of variation was calculated, based on phosphorus mass monitoring data, to be 0.83. However, it is believed that the optimization of the wastewater treatment system to achieve the WLA-derived phosphorus permit limits will reduce effluent variability. Thus, the maximum anticipated coefficient of variation expected by any facility is 0.6. This value, along with monitoring frequency, is used to select the multiplier. The current permit specifies phosphorus monitoring as weekly; **if a different monitoring frequency is used, the stated limits should be reevaluated.**

The WRB TMDL establishes TP wasteload allocations to reduce the loading in the entire watershed including WLAs to meet water quality standards for tributaries to the Wisconsin River. Therefore, WLA-based WQBELs are protective of immediate receiving waters and TP WQBELs derived according to s. NR 217.13, Wis. Adm. Code are not required.

Since wasteload allocations are expressed as annual loads (lbs/yr), permits with TMDL-derived monthly average permit limits should require the permittee to calculate and report rolling 12-month sums of total monthly loads for TP. Rolling 12-month sums can be compared directly to the annual wasteload allocation. Six-month average limits apply in the periods May – October and November – April.

Proposed Site-Specific Criteria for Phosphorus

The WRB TMDL report includes two sets of wasteload allocations. The WLA in Appendix J of the report are based on the current promulgated water quality criteria and the allocations in Appendix K are based on proposed site-specific criteria (SSC) for Lakes Petenwell, Castle Rock, and Wisconsin. If the total phosphorus limits were to be calculated based on the proposed SSC in Appendix K, this would result in phosphorus limits that are different from those calculated above.

The WLA presented in Appendix K based on the proposed SSC is the same as the current criteria WLA, so no changes will be necessary.

The WLAs contained in Appendix K only apply to the proposed SSC values in the WRB TMDL report; if SSC values other than those proposed in the WRB TMDL report are approved, then the WLA in Appendix K cannot be used and a new set of WLA would have to be calculated and documented in an updated version of the TMDL. A revised TMDL would have to go through the public approval process outlined in ch. NR 212.77, Wis. Adm. Code, and be re-submitted for USEPA approval.

Interim Limit – Phosphorus

An interim limit is needed when a compliance schedule is included in the permit to meet the TMDL limits. This limit should reflect a value which the facility is able to currently meet; however, it should also consider the receiving water quality, keeping the water from further impairment. It is recommended that the interim limit be set equal to 5.5 mg/L, expressed as a monthly average. This value reflects the current interim limit since the 4-day P_{99} concentration of 7.01 mg/L from the past five years is higher and the interim limit cannot increase. This value is recommended instead of the 30-day P_{99} concentration of 5.43 mg/L to allow operational flexibility when the facility begins to initiate phosphorus treatment optimization activities, which often consist of trial and error.

The following table lists the statistics for effluent phosphorus levels from October 2015 through April 2020 for informational purposes. In the cases where reporting the mass discharge is not required in the current permit, the mass is calculated using the reported phosphorus concentration and the effluent flow rate for that day.

Total Phosphorus Statistics		
	Concentration (mg/L)	Mass Discharge (lbs/day)
1-day P_{99}	10.0	1.7
4-day P_{99}	7.01	1.0
30-day P_{99}	5.43	0.59
Mean	4.66	0.42
Std	1.72	0.3
Sample Size	230	230
Range	0.24 - 8.28	0.014 - 3.37

Conclusions:

In summary, the following limits are recommended by this evaluation:

- Monthly average Total Phosphorus mass limit of 0.085 lb/day
- Six-month average Total Phosphorus mass limit of 0.028 lb/day
- Interim monthly average Total Phosphorus concentration limit of 5.5 mg/L

Lime Ridge Wastewater Treatment Facility has applied for an individual phosphorus variance (IPV) under s. 283.15, Wis. Stats. Eligibility for the variance is not included as part of this review. If a variance is granted and approved by the U.S. Environmental Protection Agency, the current interim limit of 5.5 mg/L may be extended beyond the end of the compliance schedule.

Attachment #1

PART 6 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

In accordance with s. NR 106.53(2)(b), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off actual flow reported from October 2015 through April 2020.

Lime Ridge last monitored effluent temperature from April 2013 through March 2014 (shown below). Since there have been no changes to the treatment process or the receiving water characteristics, this data is considered representative.

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	32	34	74	120
FEB	32	34	76	101
MAR	34	36	67	94
APR	40	46	65	100
MAY	51	58	69	95
JUN	60	60	100	109
JUL	63	63	93	93
AUG	66	66	100	98
SEP	63	64	83	88
OCT	57	58	78	105
NOV	48	48	70	105
DEC	38	39	62	90

Reasonable Potential

Permit limits for temperature are recommended based on the procedures in s. NR 106.56, Wis. Adm. Code.

- An acute limit for temperature is recommended for each month in which the representative daily maximum effluent temperature for that month exceeds the acute WQBEL. The representative daily maximum effluent temperature is the greater of the following:
  (a) The highest recorded representative daily maximum effluent temperature

(b) The projected 99th percentile of all representative daily maximum effluent temperatures

- A sub−lethal limitation for temperature is recommended for each month in which the representative weekly average effluent temperature for that month exceeds the weekly average WQBEL. The representative weekly average effluent temperature is the greater of the following:
  (a) The highest weekly average effluent temperature for the month.
  (b) The projected 99th percentile of all representative weekly average effluent temperatures for the month

Comparing the representative highest effluent temperature to the calculated effluent limits determines the reasonable potential of exceeding the effluent limits. As shown in the table above, the highest reported value was 66ºF. Therefore, **no temperature limits or monitoring are recommended.** The complete thermal table used for this calculation is in Attachment #4.

PART 7 – WHOLE EFFLUENT TOXICITY (WET)

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. Decisions below related to the selection of representative data and the need for WET limits were made according to ss. NR 106.08 and 106.09, Wis. Adm. Code. WET monitoring frequency and toxicity reduction evaluation (TRE) recommendations were made using the best professional judgment of staff familiar with the discharge after consideration of the guidance in the WET Program Guidance Document (October 29, 2019).

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC_{50} (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09 (2) (b), Wis. Adm Code.

- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. To assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC_{25} (Inhibition Concentration) greater than the instream waste concentration (IWC), according to s. NR 106.09 (3) (b), Wis. Adm Code. The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The IWC of 32% shown in the WET Checklist summary below was calculated according to the following equation, as specified in s. NR 106.03(6), Wis. Adm Code:

$$\text{IWC (as \%)} = Q_e \div \{(1 - f)\, Q_e + Q_s\} \times 100$$

Where:

Q_e = annual average flow = 0.0154 MGD = 0.024 cfs
f = fraction of the Q_e withdrawn from the receiving water = 0
Q_s = ¼ of the 7-Q_{10} = 0.2 cfs ÷ 4 = 0.05 cfs

The WET Checklist was developed to help DNR staff make recommendations regarding WET limits, monitoring, and other related permit conditions. The Checklist indicates whether acute and chronic WET limits are needed, based on requirements specified in s. NR 106.08, Wis. Adm. Code. The Checklist steps the user through a series of questions, assesses points based on the potential for effluent toxicity, and

suggests monitoring frequencies based on points accumulated during the Checklist analysis. As toxicity potential increases, more points accumulate, and more monitoring is recommended to ensure that toxicity is not occurring. A summary of the WET Checklist analysis completed for this permittee is shown in the table below. Staff recommendations based on best professional judgment are provided below the summary table. For guidance related to reasonable potential and the WET Checklist, see Chapter 1.3 of the WET Guidance Document: http://dnr.wi.gov/topic/wastewater/WETguidance.html.

WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. **0 Points**	IWC = 32% **0 Points**
Historical Data	No data. **5 Points**	No data. **5 Points**
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. **0 Points**	Same as Acute. **0 Points**
Receiving Water Classification	WWSF **5 Points**	Same as Acute. **5 Points**
Chemical-Specific Data	No limits based on ATC; ammonia, arsenic, chloride, copper, nickel, and zinc detected. Additional Compounds of Concern: None. **3 Points**	No limits based on CTC; ammonia, arsenic, chloride, copper, nickel, and zinc detected. Additional Compounds of Concern: None **3 Points**
Additives	1 biocides (chlorine) and 1 water quality conditioner (sodium bisulfate) added. P treatment chemical other than Ferric Chloride (FeCl), Ferrous Sulfate ($FeSO_4$), or alum used: No. **4 Points**	Additives used more than four days per week. **4 Points**
Discharge Category	No industrial contributors. **0 Points**	Same as Acute. **0 Points**
Wastewater Treatment	Secondary or Better **0 Points**	Same as Acute. **0 Points**
Downstream Impacts	No impacts known. **0 Points**	Same as Acute. **0 Points**
Total Checklist Points:	**17 Points**	**17 Points**
Recommended Monitoring Frequency (from Checklist):	2 tests during permit term (year 2, 4, 6, etc.)	No tests needed.
Limit Required?	No	No
TRE Recommended? (from Checklist)	No	No

After consideration of the guidance provided in the Department's WET Program Guidance Document (2019) and other information described above, **two acute WET tests are recommended** in the reissued permit. Tests should be done in rotating quarters to collect seasonal information about this discharge. WET testing should continue after the permit expiration date (until the permit is reissued).

Attachment #1

PART 8 – EXPRESSION OF LIMITS

Revisions to chs. NR 106 and 205, Wis. Adm. Code align Wisconsin's water quality-based effluent limits with 40 CFR 122.45(d), which requires WPDES permits contain the following concentration limits, whenever practicable and necessary to protect water quality:

- Weekly average and monthly average limitations for continuous discharges subject to ch. NR 210.
- Daily maximum and monthly average limitations for all other discharges.

Lime Ridge Wastewater Treatment Facility is a municipal treatment facility and is therefore subject to weekly average and monthly average limitations whenever limitations are determined to be necessary.

This evaluation provides additional limitations necessary to comply with the expression of limits in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Code. Pollutants already compliant with these rules or that have an approved impracticability demonstration, are excluded from this evaluation including water-quality based effluent limitations for phosphorus, temperature, and pH, among other parameters. Mass limitations are not subject to the limit expression requirements if concentrations limits are given.

Method for calculation:

The methods for calculating limitations for continuous discharges subject to ch. NR 210 to conform to 40 CFR 122.45(d) are specified in s. NR 106.07(3), Wis. Adm. Code, and are as follows:

1. Whenever a daily maximum limitation is determined necessary to protect water quality, a weekly and monthly average limitation shall also be included in the permit and set equal to the daily maximum limit unless a more restrictive limit is already determined necessary to protect water quality.
2. Whenever a weekly average limitation is determined necessary to protect water quality, a monthly average limitation shall also be included in the permit and set equal to the weekly average limit unless a more restrictive limit is already determined necessary to protect water quality.
    - Residual chlorine – Because a weekly average limit of 22 µg/L is necessary, a monthly average limitation of 22 µg/L shall also be included in the permit.
3. Whenever a monthly average limitation is determined necessary to protect water quality, a weekly average limit shall be calculated using the following procedure and included in the permit unless a more restrictive limit is already determined necessary to protect water quality:

    Weekly Average Limitation = (Monthly Average Limitation × MF)

    Where:

    MF= Multiplication factor as defined in Table 1

    CV= coefficient of variation (CV) as calculated in s. NR 106.07(5m)

    n= the number of samples per month required in the permit

    - Ammonia Nitrogen – Since both a daily limit and monthly limit were determined necessary for November – March, the weekly average limit to satisfy the expression of limits is either set equal to the maximum calculated daily limit (20 mg/L), the calculated weekly average limit (32 mg/L as shown in Attachment #3), or the monthly average limit multiplied by a multiplication factor. With weekly monitoring, n = 4 and a seasonal ammonia CV of 1.6 (2.80/1.73), the multiplier from s. NR 106.07(3)(e)4, Wis. Adm. Code, Table 1 is 1.82 and the limit is 13 mg/L x 1.82 = 24 mg/L. Thus, the most restrictive limit is the daily limit of 20 mg/L.

s. NR 106.07 (3) (e) 4. Table 1 — Multiplication Factor (for CV = 1.6)

CV	n=1	n=2	n=3	**n=4**	n=8	n=12	n=16	n=20	n=24	n=30
1.6	1.00	1.33	1.60	**1.82**	2.46	2.89	3.20	3.45	3.66	3.90

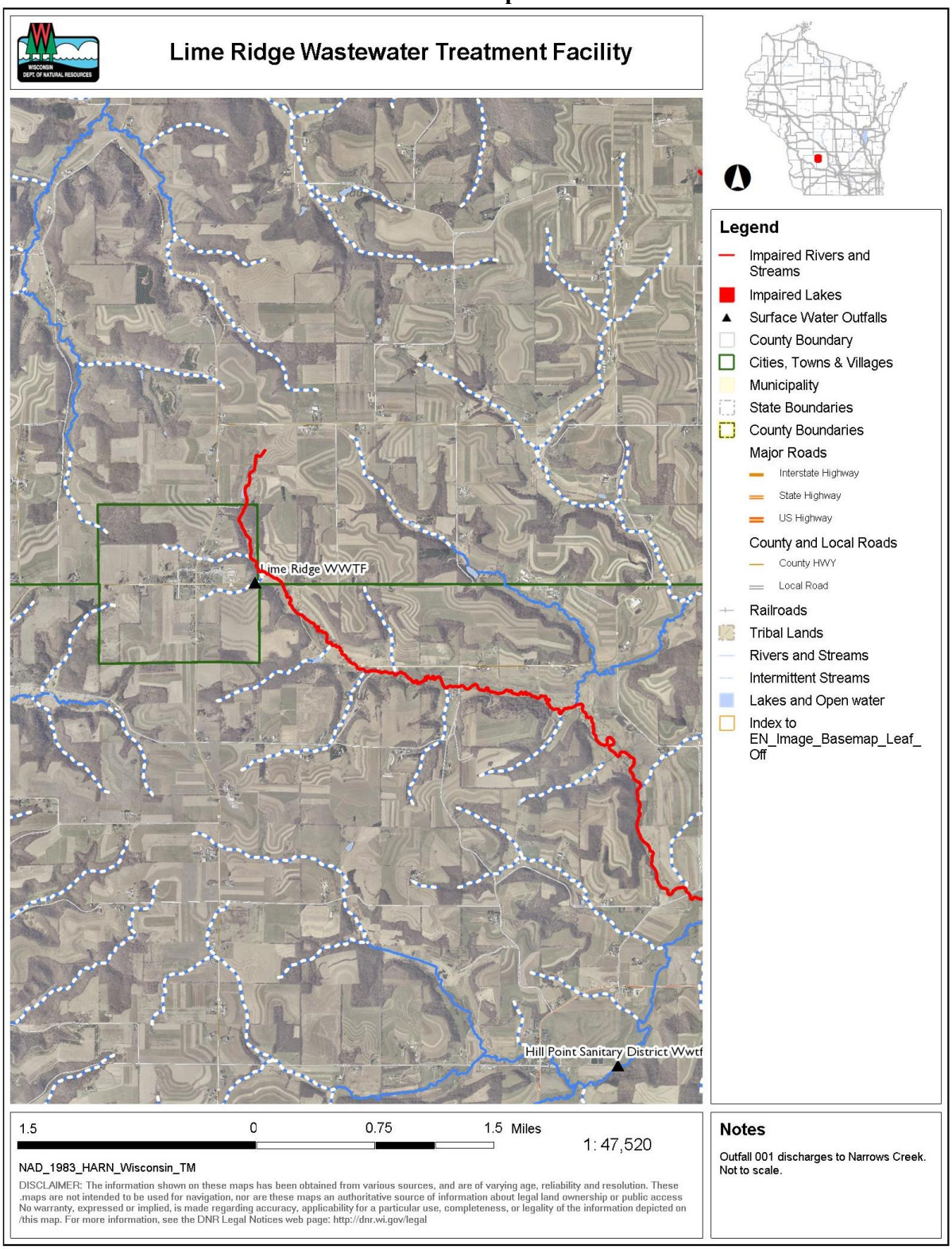
Note: This methodology is based on the *Technical Support Document for Water Quality-based Toxics Control* (March 1991). PB91-127415.

Summary of Additional Limitations:
In conclusion, the following additional limitations are required to comply with ss. NR 106.07 and NR 205.065(7) Expression of Limits.

Parameter	Daily Maximum	Weekly Average	Monthly Average
Residual chlorine	38 µg/L	22 µg/L	**22 µg/L**
Ammonia Nitrogen			
April	20 mg/L	19 mg/L	8.0 mg/L
May – September	20 mg/L	5.0 mg/L	8.0 mg/L
October	20 mg/L	5.0 mg/L	13 mg/L
November – March	20 mg/L	**20 mg/L**	13 mg/L

Attachment #2

Site Map



Ammonia Nitrogen Calculations from the WQBEL Memo Dated February 4, 2004

AMMONIA (as N) LIMITS			
CLASSIFICATION: **WARMWATER SPORTFISH, WARMWATER FORAGE FISH COMMUNITY**			
EFFLUENT FLOW (MGD):	0.0154		
EFFLUENT FLOW (cfs):	0.024		
MAX. EFFLUENT pH (s.u.):	7.92		
f (withdrawal factor)	0.00		
BACKGROUND INFORMATION:			
	summer	***winter***	
7-Q_{10} (cfs)	0.2	0.2	
7-Q_2 (cfs)			
Ammonia (mg/L)	0.06	0.12	
Temperature (deg C)	25	3	
pH (std. units)	8.21	7.97	
% of river flow used:	100	25	
Reference weekly flow:	0.2	0.05	
Reference monthly flow:	0.2	0.05	
CRITERIA (in mg/L):			
4-day Chronic (@ backgrd. pH):			
early life stages present	2.24	6.35	
early life stages absent	2.24	10.31	
30-day Chronic (@ backgrd. pH)			
early life stages present	0.90	2.54	
early life stages absent	0.90	4.12	
EFFLUENT LIMITS (in mg/L):			
Weekly average			
early life stages present	**20.58**	19.42	
early life stages absent		**31.70**	
Monthly average			
early life stages present	**7.93**	7.62	
early life stages absent		**12.53**	

The 5.0 mg/L weekly average limit from May – October that has been carried over due to antidegradation and antibacksliding as specified in ch. NR 207, Wis. Adm. Code

Attachment #4

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

Facility: Lime Ridge WWTF

Outfall(s): 001

Date Prepared: 6/23/20

Design Flow (Qe): 0.02 MGD

Storm Sewer Dist. 0 ft

7-Q_{10}: 0.20 cfs

Dilution: 25%

f: 0

Stream type: Small warm water sport or forage fish co

Qs:Qe ratio: 2.1 :1

Calculation Needed? YES

	Temp Dates	**Flow Dates**
Start:	Apr 2013	10/01/15
End:	Mar 2014	04/30/20

Month	Water Quality Criteria			Receiving Water Flow Rate (Qs)	Representative Highest Effluent Flow Rate (Qe)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Ta (default)	Sub-Lethal WQC	Acute WQC		7-day Rolling Average (Qesl)	Daily Maximum Flow Rate (Qea)		Weekly Average	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(cfs)	(MGD)	(MGD)		(°F)	(°F)	(°F)	(°F)
JAN	33	49	76	0.20	0.021	0.031	0	32	34	74	120
FEB	34	50	76	0.20	0.020	0.053	0	32	34	76	101
MAR	38	52	77	0.20	0.031	0.076	0	34	36	67	94
APR	48	55	79	0.20	0.022	0.048	0	40	46	65	100
MAY	58	65	82	0.20	0.060	0.060	0	51	58	69	95
JUN	66	76	84	0.20	0.013	0.024	0	60	60	100	109
JUL	69	81	85	0.20	0.033	0.063	0	63	63	93	93
AUG	67	81	84	0.20	0.023	0.038	0	66	66	100	98
SEP	60	73	82	0.20	0.041	0.114	0	63	64	83	88
OCT	50	61	80	0.20	0.021	0.040	0	57	58	78	105
NOV	40	49	77	0.20	0.014	0.043	0	48	48	70	105
DEC	35	49	76	0.20	0.035	0.097	0	38	39	62	90